HORSESHOE CRAB RECOVERY COALITION

15 May 2020

Robert E. Beal, Executive Director
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200A-N
Arlington, Virginia 22201

Subject: Horseshoe Crab restoration in the Delaware Bay and along the eastern Seaboard, and the 2019 Stock Assessment.

Dear Mr. Beal,
This letter represents the views of a coalition of conservation groups and businesses that includes National Audubon Society, Audubon NY, Audubon MD-DC, Delaware Audubon, New Jersey Audubon, New York City Audubon, Connecticut Audubon, Delaware Nature Society, Mass Audubon, Defenders of Wildlife, Revive and Restore, American Bird Conservancy, American Littoral Society, and Wildlife Restoration Partnerships.

In 2009, the conservation community joined with the Atlantic States Marine Fisheries Commission (ASMFC) to better manage the harvest of horseshoe crabs (ASMFC 2009). The resultant Adaptive Resource Management (ARM) framework represented a useful new tool in our efforts to restore Delaware Bay's horseshoe crab population after the devastating overfishing of the 1990s. Ten years later, and more than 20 years after ASMFC management began, horseshoe crab restoration remains an unattained goal.

The 2019 horseshoe crab benchmark stock assessment for the Atlantic Coast (ASMFC 2019) showed less progress than our coalition hoped. The assessment confirms our view that current management has stabilized the decline of the horseshoe crab population. However, while stability is good, restoration to carrying capacity was the goal set in 1998. This is essential for horseshoe crabs to resume a functional role in ecosystems, provide for recovery and maintenance of red knots and other shorebirds, whose populations crashed from horseshoe crab overharvest and loss of egg resources, and provide for other fish and wildlife that depend on a recovered and healthy horseshoe crab population.

Despite horseshoe crab populations not increasing toward carrying capacity, the 2019 stock assessment provides no new actions that will lead to the recovery of horseshoe crabs, only refinements to the methods of estimating the harvest quota through the ARM model. Updating stock assessment methods is an opportunity to revise and implement an improved restoration strategy, one that this coalition encourages the ASMFC takes advantage of.

Our coalition urges the ASMFC to consider the intent of the horseshoe crab management plan in its assessment, which is to ensure sustainably harvested populations while allowing horseshoe crabs to have a "continued role in the ecology of coastal ecosystems" (AMFSC 1998). The stock assessment may not completely consider whether the horseshoe crab population, at its current size, is providing "the necessary quantities of adults and eggs for fish and wildlife resources." The 1998 fisheries management

plan recognized ecosystem service as a prerequisite to "appropriate coastwide management of the horseshoe crab population."

Our coalition commends the ASMFC's efforts to reconcile all wildlife and human interests that rely upon horseshoe crabs. We recommend ASMFC focus on more rapid restoration of the population to carrying capacity so horseshoe crabs can quickly resume a functional role in ecosystems. Increasing horseshoe crabs to carrying capacity is one of the factors critical to the viability of the Federally threatened red knot (*Calidris canutus rufa*), sportfish, forage fish, and loggerhead turtles (*Caretta caretta*). It would also help many local businesses that rely on robust fisheries in Delaware Bay.

We recognize moratoriums are not viable in each state, but studies estimate full restoration is possible in fewer than 12 years if the killing of horseshoe crabs is stopped (e.g., Tan and Jardin 2017). To better understand horseshoe crab mortality, we support a more accurate estimate of losses. This includes fully accounting for biomedical bleeding mortality and injury, incorporating improper release of bled crabs and releases outside original capture sites. A more accurate estimate must also address bycatch mortality and harvests in federal waters that are landed as non-Delaware Bay horseshoe crabs.

To achieve management success through restoration while remaining consistent with the 1998 management plan, our coalition recommends the following:

1. **Ensure the population estimate used in ARM and Catch Survey Models is specific to the Delaware Bay population**, and not the result of a composite estimate of Delaware Bay and non-Delaware Bay origin crabs. For example, the inclusion of the NJ Finfish Trawl confounds the estimate because any increase in numbers from this survey may reflect NJ's Moratorium on the harvest of horseshoe crabs rather than the efficacy of the ARM framework.

2. **Reduce the quota of crabs in MD and VA to levels determined by the ARM model (i.e., no offset allowance).** The ARM model generates quotas for each state based on results from the Virginia Tech offshore trawl survey of horseshoe crabs. The survey's swept area includes all areas from offshore Atlantic City south to the tip of the Delmarva peninsula. Thus, the Virginia Tech trawl survey already consists of all crabs in coastal VA and MD, so there should not be allowances beyond that which is defined by ARM quota.

3. **Consider innovative horseshoe crab population survey methods, including egg density counts, to improve accuracy of population estimates and ensure a more rapid population restoration.**[1] Evaluating progress towards horseshoe crab recovery using the Virginia Tech offshore trawl could be problematic in several ways: (1) population estimates vary widely from year to year, (2) population estimates include trajectories of a small inland bay populations, which could produce biased regional estimates and (3) the survey has no historical benchmark to determine carrying capacity. We believe using horseshoe crab egg densities to define carrying capacity and track each season's outcomes relative to historic densities is a more objective metric that avoids the risk of opening harvests to females prematurely. An accurate method of assessing egg densities has been developed to evaluate horseshoe crab spawning levels on restored beaches. The method relies on quantifying egg clusters instead of individual eggs. This allows for statistical comparisons with

[1] Delaware Nature Society annually evaluates the horseshoe crab survey method and results in that state. The organization supports the method used by the Delaware Division of Fish and Wildlife at this time.

historic surveys when crabs were known to be at carrying capacity and provides a direct reflection of conditions for shorebirds and other wildlife using eggs.

4. **Determine with greater accuracy mortality from illegal and poorly documented sources such as bycatch in scallop, clam, flounder, and all trawl, dredge, or net fisheries known to affect horseshoe crabs.** The ASFMC should also determine the extent of crab harvesting in federal waters and landed as non-Delaware Bay origin crabs. The Commission should develop strategies to end or curtail these losses.

5. **Require biomedical companies to embrace restoration as a condition of profiting from horseshoe crab blood.** This can be done by increasing the role of state agencies in regulating the biomedical industry engaged in horseshoe crab bleeding. This would allow greater flexibility in creating adaptive management plans that reduce bleeding mortality and injury to near zero. An adaptive management plan to reduce impacts could be financially supported by requiring biomedical companies to compensate for the loss of horseshoe crabs related to their activities.

Our coalition stands ready to work with the ASFMC to make these changes to the ARM framework and the management of horseshoe crabs along the entire Atlantic coast. We are also working closely with partners in the biomedical industry to support a transition from the use of Limulus amoebocyte lysate (LAL) to recombinant factor C (rFC), which we believe will have a significant effect on horseshoe crab population viability coastwide. As long as the Delaware Bay horseshoe crab population remains below carrying capacity, there may be little hope to recover less economically valuable and smaller populations in New England, NY/NJ Harbor, the Carolinas and Georgia. However, methods employed to restore horseshoe crab populations in Delaware Bay can be used as a model to bring all populations back to ecological carrying capacity so that the horseshoe crab resumes its role as a keystone species in Atlantic coast estuarine ecosystems.

LITERATURE CITED

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